

Weighted a priori estimates for solutions of uniformly elliptic systems

María Eugenia Cejas

Abstract

Let us consider the following problem

$$\begin{aligned}\mathcal{L}u &= \sum_{i,j} a_{ij}(x) \frac{\partial^2 u}{\partial x_i \partial x_j} = f \text{ in } \Omega \\ u &= 0 \text{ on } \partial\Omega\end{aligned}\tag{0.1}$$

where $\Omega \subseteq \mathbb{R}^n$ is a bounded domain, \mathcal{L} is an uniformly elliptic operator of order 2 defined for functions $u : \Omega \rightarrow \mathbb{R}^n$, in the spirit of Agmon, Douglis and Nirenberg.

In this talk we present some results obtained for the problem (0.1) in weighted Sobolev spaces for operators with coefficients a_{ij} in the class VMO .

We will show the proof of solvability, uniqueness of the problem (0.1) and the weighted a priori estimate

$$\|u\|_{W_w^{2m,p}(\Omega)} \leq C \|f\|_{L_w^p(\Omega)}\tag{0.2}$$

where w is a weight in the well-known A_p class.